

DOCUMENT RESUME

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IDENTIFIERS

ABSTRACT

The two-part set consists of a student handbook and a related teachers' handbook in allied health education for use at the seventh grade level. The student handbook contains four units: (1) investigating health care needs, (2) mental health--study of different types of job roles and their related activities and skills, (3) treatment--diagnosis of health problems, and (4) pollution in our environment--study of relationships between pollution and health. Each unit provides learning activities and exercises for obtaining knowledge in different areas of the health field, particularly in the process of gathering, recording, analyzing, and diagnosing health needs data. The exercises provided in the student handbook are referred to in the teachers' handbook, which focuses on the same units provided in the student handbook, and presents suggestions for learning processes and activities, notes, and resource materials.

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ALLIED HEALTH FIELD

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SEVENTH GRADE

Operation TACT  
Field Test Curriculum  
1973-1975

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## INVESTIGATING HEALTH CARE NEEDS

ALLIED HEALTH FIELD: 1) What are health care needs?

2) Who provides these needs?

3) Are there health care needs that are not being taken care of?

This first unit is designed to help you investigate health care in the Hartford community. There are several ways to find the answers to the questions listed above.

One way is to observe the people around you and to ask them questions. A scientist would call this gathering DATA (Day-tuh). Data is information. An observer must learn to record data very precisely or exactly. In order to come to conclusions about your health care needs, you must ANALYZE (an-up-lyz) or study carefully this data.

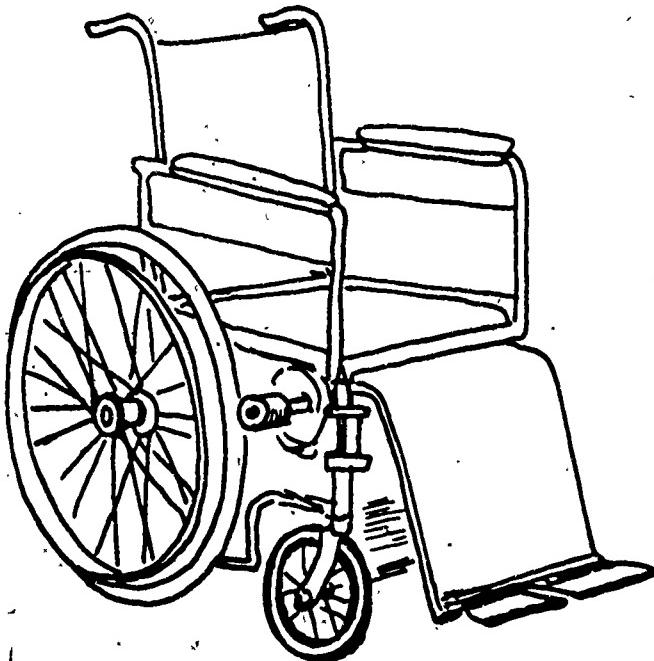
If this unit is successful, you will be able to:

- 1) Name at least 5 important types of health care needs in your community.
- 2) Make careful observations; gather data.
- 3) Record data precisely.
- 4) Analyze the data and make generalizations.
- 5) List at least 4 agencies that service your health care needs.
- 6) Determine if there are health care needs in your community that are not being serviced and why they are not.

## PICTURE SEQUENCE - HEALTH CARE NEEDS

Your teacher will show the class a series of pictures. Each picture shows a different health care need in your community.

- 1) LIST the health care needs you observed in the pictures.



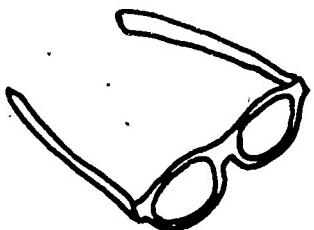
- 2) GROUP the items. Which two or three items would you put together in the same group?

Why are they related to each other?

Now group all of the items.

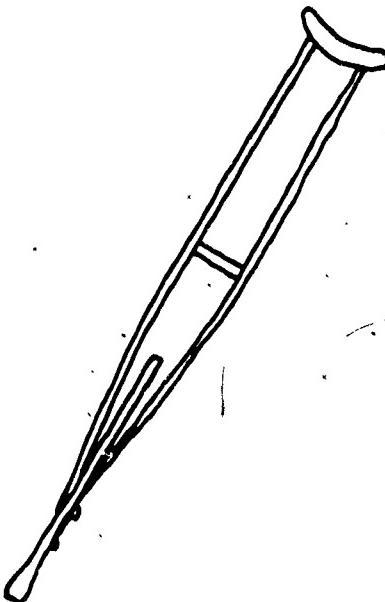
- 3) LABEL each group. Give each one a title or name that fits all of the groups' members.

Your teacher will now pass out the pictures. Divide into groups and write a caption for your group's photograph that might be put under the photo if it appeared in the newspaper.



Now your teacher will select several students to make labels giving the category names for the bulletin board display.

For extra credit, bring in some newspapers or other pictures and put them on the bulletin board under the proper category. You may also include the pictures in your notebook.



## GATHERING, RECORDING AND ANALYZING DATA

### ACTIVITY

Here is a simple activity that will help you learn how to gather, record and analyze DATA. Your teacher will ask 5 students to leave the room for one minute. After one minute they will return.

Your task is to observe them closely and record below as precisely as you can, any observations that might tell you what may have happened in the hall way.

Student #1

Student #2

Student #3

Student #4

Student #5

On the basis of your recorded data, tell what you think happened in the hall way.

Now have your classmates tell you what they did in the hall way.

Were you right or wrong in your conclusions?

You have just made some conclusions based on observation.

Are there more precise (exact) ways to gather data (information) than observation? Write in some suggestions below:

1)

2)

3)

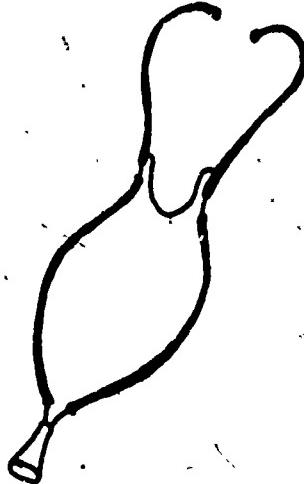
4)

5)

The teacher will now select five other students to leave the class room for one minute. Your task when they return is to determine what happened in the hallway.

While they are out of the room, you may want to form teams to examine them when they return. Decide on the procedure you will use. (Remember your suggestions)

What procedures did you use? What instruments?



Record your measurements:

Student #1

Student #2

Student #3

Student #4

Student #5

On the basis of your recorded data, tell what you think happened in the hall way.

Were you right or wrong?

QUESTIONS:

- 1) What two methods of gathering data did we use?
  - a)
  - b)

Which is more precise? Why?

Now go on and complete the Mastery Sheet on the next page.

## MASTERY SHEET #1

- 1) DATA is \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 2) The DATA I gathered in this activity is \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 3) I think the difference between observation and measurement is  
that observation is \_\_\_\_\_  
\_\_\_\_\_  
and measurement is \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 4) Which is more precise, observation or measurement? Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 5) To ANALYZE is to \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 6) Explain how you analyzed your data in this experiment. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## STUDENT DATA BANK

- 9 -

## FAMILY DATA BANK

## INTERVIEW SUMMARY

LIST and number all the specific health needs in your family.

GROUP the items in the above list into categories.

LABEL each category (give a name to each group).

## CATEGORIZING

Discuss the different categories the members of your class used. That is, discuss the reason they put certain items together.

When you put things into categories, you group them for purposes of particular discussion. In categorizing, you put things that are alike together. For example, if you were given the following items:

- 1) plum
- 2) tiger
- 3) pear
- 4) grape

and were asked to cross out the item that does not belong in the category, you would cross out 2) tiger. Why? Because the purpose of this category is to group together fruits. There is a question which is understood when you see this list. That question is: Which of these items are fruits?

Why did you group your items together?

For each group you made, write below the question that is understood.

Look at the items in your family data bank. If you have not already done so, categorize them now in terms of what kind of medical treatment was required.

1) Emergency Treatment

2) Preventative Treatment

3) Rehabilitative Treatment

4) Environmental Treatment

5) Custodial Treatment (staying in a hospital or nursing home for a period of time).

6) Out-Patient Treatment

OPTIONAL: COMMUNITY DATA BANK

## MEDICAL HISTORY AND SCHOOL PHYSICAL EXAMINATION FORMS

Your teacher will give you some medical history forms to look over. Practice filling them in.

Notice all of the different kinds of information required, ranging from your height and weight to the types of diseases you have had.

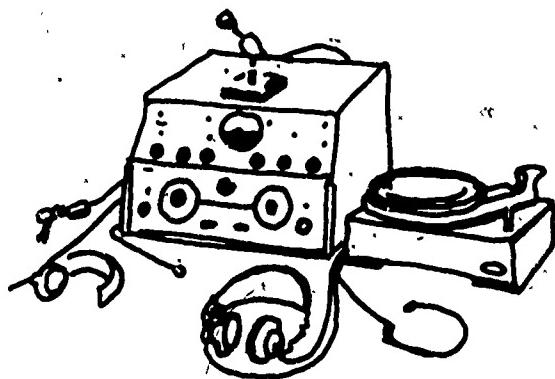
## SCHOOL HEALTH FACILITIES

Your school doctor and nurse will be visiting your class room to discuss the health programs and facilities available at your school.

Write below some questions you might want to ask them:

Language, Speech and Hearing are the major concerns of the Speech Therapist. He is interested in how well you communicate. The Quirk Middle Speech Therapist will also be guest speaker in your class room and will explain in greater detail his school role.

Enter here the names of any equipment these health team members bring with them:



## COMMUNITY HEALTH NEEDS

Tomorrow on your way to school observe the health needs present in your community. What kinds of health problems can you see in your neighborhood?

Record your observations below:

## IT'S JUST SOMETHING IN MY EYE

George walks to school every day. He only lives about six blocks from the junior high school and it helps him wake up in the morning to walk.

George likes his neighborhood because there are so many different kinds of activities. By the time he is on his way to school, there are people all over the streets: other kids walking to school, people opening their stores, workers on their way to the factories. In a way, George can feel and hear and see and smell and, almost, taste the city as he walks.

Of course, all of this takes some time and George is usually a few minutes late for school. Today is no exception.

"OK, George," his teacher says, "let's get the lead out. Open your book to Chapter IV and pay attention to what I have written up here on the board. Since you're here, George, why don't you read out loud what I've written?"

"Sure," George answers. "Let's see, now. Didn't you write a little too lightly? I can't quite make out that first word."

"Are you having trouble seeing again, George?"

"Oh, no, Mr. Franklin. It's just something in my eye."

"George," Mr. Franklin says, "I think you had better go down and see the nurse. This is the third or fourth time you haven't been able to read from the board."

George had been having some problems with his eyes but he had always been afraid to go to the nurse. It kind of helped being told to go by a teacher.

"Let's see, now, George" the nurse says, "this is the first time you have been here, isn't it."

"Yes, Mam."

"Try to read the letters on that chart on the wall. Cover your left eye with your hand and read the third line from the top."

"I can't read that one, Mam, but I can read the one above it pretty well."

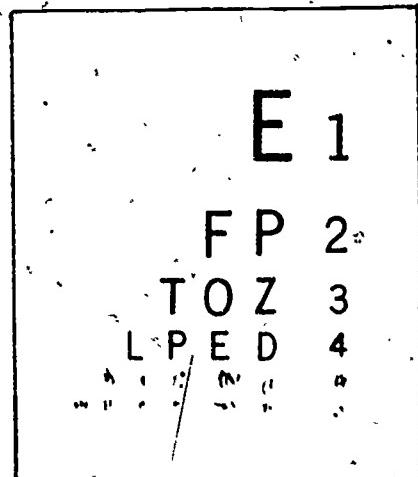
"Sit down a minute, George," the nurse asks. "I'm just a general purpose nurse, you know. I'm not an optometrist so I can't really tell you what's wrong with your eyes. But I do know there's a problem with your vision. A lot of children in this school have a problem with their eyes because of all the air pollution from the factories."

"Yeah, I walk by them every morning on my way to school."

"Well, then, you know what I mean: All I can do is tell you that you have a problem and that you should go to an optometrist to exam your eyes. Do you know where the clinic is on 3rd and Green?"

"Sure."

"Well, you go and ask for Dr. Johns."



## FILM

As you watch the film, try to answer the questions below:

1) Do you see any areas of health needs that the class did not mention already? Add them to your list and categories.

2) What kinds of people do you see helping the hospital patients?

What kinds of jobs do they have?

List four jobs and, in one or two sentences each, outline briefly what the person does. (Use the back of this paper if you need more room.)

3) What kinds of skills did the people in the hospital use in helping the patients?

4) Where do people get the medical help they need?

You have just discussed the health care facilities and services available in your community.

LISI the facilities and services below:

GROUP

LABEL

## MASTERY SHEET

- 1) Name at least five (5) important health care needs in your community.
  
  
  
  
  
  
- 2) Name some problems that can be found in Hartford's health care system.
  
  
  
  
  
  
- 3) Data is \_\_\_\_\_
  
- 4) Analysis is \_\_\_\_\_
  
- 5) A category is \_\_\_\_\_
  
- 6) Name at least four (4) places you can go for health care in your community.

UNIT II  
MENTAL HEALTH

## MENTAL HEALTH

- QUESTIONS:
- 1) What is a role?
  - 2) What are some different types of job roles?
  - 3) How can you decide which job role appeals to you most?

This unit will help you investigate different types of jobs and the kinds of activities and skills needed for each.

One way to do this is to observe people working and to record whether they work mostly with people, data or things. As you learned in Unit I, data (Da-tuh) is information. A person who works mostly with data will spend much of his time working with facts, figures, test results and other types of information. A job that deals primarily with people involves the skill of communicating with others. When we say a person works with things, we mean that his job is to operate machines and other types of equipment. Of course, some jobs involve working with all three. For example, a mechanic who works in a garage for someone else works primarily with machines (things). A mechanic who owns his own garage must also work with people and data. He must deal with customers and keep his books.

As you observe and record your job role information, remember to be precise (exact) so that you can analyze or study it carefully.

If this unit is successful, you will be able to:

- 1) Define work role;
- 2) Define student role;
- 3) Create, take part in and analyze role-playing situations;
- 4) Identify different types of job roles;
- 5) Identify job roles that most appeal to you;
- 6) Discuss how being happy with your job affects your positive self image.

UNIT VOCABULARY WORDS

- |               |            |
|---------------|------------|
| 1. role       | 6. things  |
| 2. job        | 7. observe |
| 3. occupation | 8. record  |
| 4. people     | 9. analyze |
| 5. data       |            |

## IDENTIFYING ROLES

You are going to try an experiment in observation. The purpose of this experiment is to see how much you can find out about a person's job role by observing his or her hands.

1. Below are five (5) photographs. Look at each very carefully and then write below, in one or two sentences each, what the hands in the picture tell you about the person's job.

2. Now see how much you can find about the job roles of the members of your family by observing their hands over a period of time.

What activities do your mother's hands perform during the day? List them below:

How do these activities place her in a certain job role? What kind of job role?

On a rating scale of 1 - 10 (1 is the lowest), how would you rate your mother in terms of contact with people, data and things?

PEOPLE	1 2 3 4 5 6 7 8 9 10
DATA	1 2 3 4 5 6 7 8 9 10
THINGS	1 2 3 4 5 6 7 8 9 10

If all three together add up to 100%, what percent of your mother's time is spent in contact with people?

with data?

with things?

Figure Space:

## IDENTIFYING ROLES

These exercises will give you practice in identifying the roles a person performs and in describing whether these roles emphasize people, data or things.

1. Your teacher will show the class a short cartoon. Watch it carefully and then answer the two questions below:

- a) What role did the major character play?
- b) Was the main character concerned more with people, data or things?

Rate him:

PEOPLE                  1 2 3 4 5 6 7 8 9 10

DATA                  1 2 3 4 5 6 7 8 9 10

THINGS                  1 2 3 4 5 6 7 8 9 10

2. You will now listen to tapes of two (2) short job descriptions. Notice that the name of the job has been left out. Try to guess, based on the role described, what job each ad. is for.

1.

2.

3. Hospital People:

For the last activity in this area, you will be given a short selection to read. Read it carefully and then fill out the rating scale below:

Job: \_\_\_\_\_

Some things done on the job:

1.

2.

3.

4.

5.

PEOPLE            1 2 3 4 5 6 7 8 9 10

DATA            1 2 3 4 5 6 7 8 9 10

THINGS            1 2 3 4 5 6 7 8 9 10

One way people find out about jobs and job roles is by reading newspaper and magazine ads.

1. Write two (2) short want ads for the HARTFORD COURANT that outline different occupational or job roles.
  2. Create a poster showing one of the job roles listed below:
    - a. military man
    - b. housewife
    - c. student
    - d. musician
    - e. nurse
    - f.

## WHAT ROLES AM I EXPECTED TO PLAY?

1. List below three (3) people who make demands on you and/or whom you wish to please. Under each person's name (use fictional names if you wish) list as many specific things as possible that they wish you to do. For example, a friend may be telling you to drink; your mother might not want you to drink.

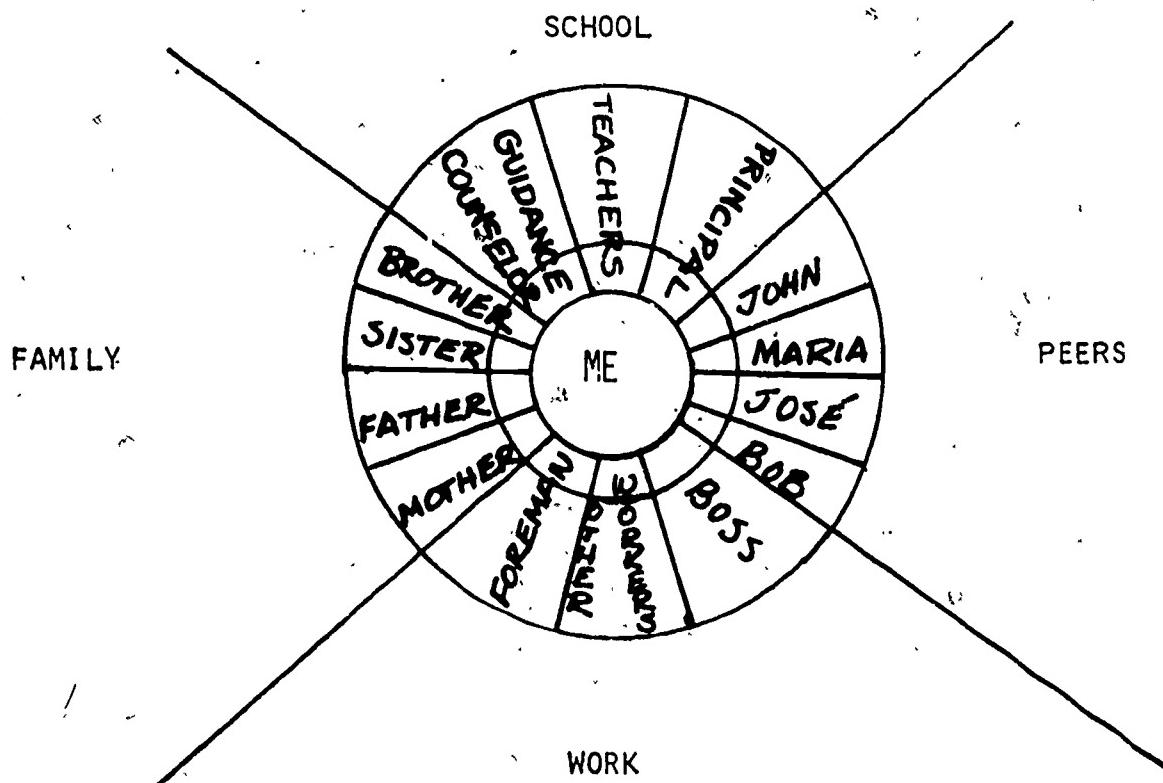
1.

2.

3.

Now go back through the list of items. Circle any demands or pressures that conflict and draw connecting lines between them.

These kinds of conflicts can be diagrammed with the use of a role model wheel like the one below:



Now make your own role model wheel below using some of the conflicts on your list:

One important role you are expected to play at this time  
is the role of a student.

1. What kinds of pressures or demands are placed on you in your role as a student? List some:
  2. Which of these pressures try to make you aware of people? Put a \* next to those. Which of these pressures try to make you aware of data? Put a + next to them. Put a ♥ next to the demands that try to make you aware of things.

Look at your data sheet. How many of the items you listed have a \* and a + and a ❤ next to them?

## ROLE-PLAYING SITUATIONS

Your teacher will now help your class prepare to role-play some of the student role situations you have mentioned on page 10.

When you role play, you act out a situation. You can act out many different endings to the same story. If you don't like the way other students in your class act out an ending, you may want to act out the situation in a different way. Remember, there is no "correct" way to end the story.

For each role play you observe, be sure to fill out the observation data sheet on the next pages.

After the role plays, you will have the chance to talk about each situation.

## ROLE PLAYING OBSERVATION DATA SHEET

1. Define as precisely as you can the problem being presented.
2. How did each person handle the problem? Describe as precisely as possible.
3. Suggest better and/or other ways each person could have dealt with the problem.
4. What decision was made in dealing with the problem?
5. Was this a fair decision?—How was the decision made? What decision would you have made? Suggest a decision for each character involved.

Share your individual responses to the role-playing situations. Your class may wish to role play the situation again using some of the suggestions from the class discussion.

## ROLE PLAYING OBSERVATION DATA SHEET

1. Define as precisely as you can the problem being presented.
2. How did each person handle the problem? Describe as precisely as possible.
3. Suggest better and/or other ways each person could have dealt with the problem.
4. What decision was made in dealing with the problem?
5. How was this decision made? Do you think it was a fair decision? What decision would you have made? Suggest a decision for each character involved.

Share your individual responses to the role-playing situation.

## ROLES AND THE ENVIRONMENT

On the next few pages is a selection from Richard Wright's autobiography Black Boy. At the time of this incident, Richard is six (6) years old and lives in Memphis. The year is 1914.

One evening my mother told me that thereafter I would have to do the shopping for food. She took me to the corner store to show me the way. I was proud; I felt like a grown-up. The next afternoon I looped the basket over my arm and went down the pavement toward the store. When I reached the corner, a gang of boys grabbed me, knocked me down, snatched the basket, took the money, and sent me running home in panic. That evening I told my mother what had happened, but she made no comment; she sat down at once, wrote another note, gave me more money, and sent me out to the grocery store again. I crept down the steps and saw the same gang of boys playing down the street. I ran back into the house.

"What's the matter?" my mother asked.

"It's those same boys," I said. "They'll beat me."

"You've got to get over that," she said. "Now, go on."

"I'm scared," I said.

"Go on and don't pay any attention to them," she said.

I went out of the door and walked briskly down the sidewalk, praying that the gang would not molest me. But when I came abreast of them, someone shouted.

"There he is!"

They came toward me, and I broke into a wild run toward home. They overtook me and flung me to the pavement. I yelled, pleaded, kicked, but they wrenched the money out of my hand. They yanked me to my feet, gave me a few slaps, and sent me home sobbing. My mother met me at the door.

"They b-beat m-me," I gasped. "They t-took the m-money."

I started up the steps, seeking shelter in the house.

"Don't you come in here," my mother warned me.

I froze in my tracks and stared at her.

"But they're coming after me," I said.

"You just stay right where you are," she said in a deadly tone. "I'm going to teach you this night to stand and fight for yourself."

She went into the house and I waited, terrified, wondering what she was about. Presently she returned with more money and another note and also a long heavy stick.

"Take this money, this note, and this stick," she said. "Go to the store and buy those groceries. If those boys bother you, then fight."

I was baffled. My mother telling me to fight, a thing she had never done before.

"But I'm scared," I said.

"Don't you come into this house until you've gotten those groceries," she said.

"They'll beat me; they'll beat me," I said.

"Then stay in the streets; don't come back here!"

I ran up the steps and tried to force my way past her into the house. A stinging slap came on my jaw. I stood on the sidewalk, crying.

"Please, let me wait until tomorrow," I begged.

"No," she said. "Go now! If you come back into this house without those groceries, I'll whip you!"

She slammed the door, and I heard the key turn in the lock. I shook with fright. I was alone upon the dark, hostile streets and gangs were after me. I had the choice of being beaten at home or away from home. I clutched the stick, crying, trying to reason. If I were beaten at home, there was absolutely nothing that I could do about it; but if I were beaten in the

streets, I had a chance to fight and defend myself. I walked slowly down the sidewalk, coming closer to the gang of boys, holding the stick tightly. I was so full of fear that I could scarcely breathe. I was almost upon them now.

"There he is again!" the cry went up.

They surrounded me quickly and began to grab for my hand.

"I'll kill you!" I threatened.

They closed in. In blind fear, I let the stick fly, feeling it crack against a boy's skull. I swung again, lamming another blow, then another. Realizing that they would retaliate if I let up for a second, I fought to lay them low, to knock them cold, to kill them so that they could not strike back at me. I flayed with tears in my eyes, teeth clenched, stark fear making me throw every ounce of my strength behind each blow. I hit again and again, dropping the money and the grocery list. The boys scattered, yelling, nursing their heads, staring at me in utter disbelief. They had never seen such frenzy. I stood panting, egging them on, taunting them to come on and fight. When they refused, I ran after them, and they tore out for their homes, screaming. The parents of the boys rushed into the streets and threatened me, and for the first time in my life I shouted at grown-ups, telling them that I would give them the same if they bothered me. I finally found my grocery list and the money and went to the store. On my way back I kept my stick poised for instant use; but there was not a single boy in sight. That night I won the right to the street of Memphis.

To prepare for discussion of this selection from Black Boy, write out answers to the following questions:

1. Explain why you approve or disapprove of the actions of Richard's mother.
2. What alternative choices does Richard's mother have? What do you think would happen if those alternative choices were taken?
3. Describe a different environment where Richard's mother might act differently.

Environment:

Mother's action:

4. Do you think that Richard Wright, in looking back on his life in this book, approves or disapproves of his mother's action? Why?
5. What role did Richard's mother feel he had to play? Why?
6. If you have lived in different neighborhoods, areas of the state, or areas of the country, do you think different roles would be expected of you? If so, explain.

## WHAT ROLES DO I LIKE BEST?

A DAY IN THE LIFE OF \_\_\_\_\_

Tomorrow you will keep a record of your whole day using a time chart like the one on the following page. One purpose for this activity is for you to analyze the things you like to do best. We can talk about analyzing a day in terms of three kinds of activities. Those activities where we are primarily dealing with other people, we will label PEOPLE. Those activities where we are working with figures, experimenting and making measurements, we will label DATA. When we are working most of the time with machines and equipment, we can label it THINGS. Of course, many jobs involve all three.

Look at the time chart:

In the column labeled "interest scale" rate the activity in terms of your enjoyment and interest. If the activity was very interesting and enjoyable, give it a rating of 5. If you were bored and disliked the activity, give it a rating of 1. A rating of 3 would indicate that you could "take it or leave it."

After you have filled out the time chart, make an analysis of your results:

1. Which part of your day did you like best? Why?
2. What part of your day was spent with people?
3. What part of your day was spent with data?
4. What part of your day was spent with things?
5. If your whole day adds up to 100%, what percent was spent with people? with data? with things?  
Make a pie or circle graph showing your results.
6. Build an imaginary time chart describing your ideal day.

INTEREST  
SCALE

TIME	ACTIVITY	CONTACT PEOPLE	MY ROLE	KIND OF ACTIVITY	
				P	D

Sample:  
9 - 10 A.M. Math Class Classmates, teacher Student

4

## PREPARING TO MAKE AN INTERVIEW FORM

This week some people working in health professions will be visiting the class. They will be describing the kind of work they do. You have already begun to think about some of the things you like to do. As a class you will develop an interview form in order to prepare questions for the visitors. What are the questions you would like them to answer if you were looking for a job? Think back on your own analysis of your time chart and write below any questions you would like to have included in an interview form.

After each interview, fill out a Job Role Chart.

GUEST SPEAKERS-JOB ROLE CHART

1. Speaker \_\_\_\_\_

Job \_\_\_\_\_

Duties \_\_\_\_\_  
\_\_\_\_\_Works with: Rate

PEOPLE      1    2    3    4    5    6    7    8    9    10

DATA        1    2    3    4    5    6    7    8    9    10

THINGS      1    2    3    4    5    6    7    8    9    10

Note Space:

GUEST SPEAKER-JOB ROLE CHART

2. Speaker \_\_\_\_\_  
Job \_\_\_\_\_  
Duties \_\_\_\_\_  
\_\_\_\_\_

Works with: Rate

PEOPLE	1	2	3	4	5	6	7	8	9	10
DATA	1	2	3	4	5	6	7	8	9	10
THINGS	1	2	3	4	5	6	7	8	9	10

Note Space:

GUEST SPEAKER-JOB ROLE CHART

3. Speaker \_\_\_\_\_  
Job \_\_\_\_\_  
Duties \_\_\_\_\_  
\_\_\_\_\_

Works with: Rate

PEOPLE	1	2	3	4	5	6	7	8	9	10
DATA	1	2	3	4	5	6	7	8	9	10
THINGS	1	2	3	4	5	6	7	8	9	10

Note Space:

## OPTIONAL ACTIVITIES - GUEST SPEAKERS - PEOPLE, DATA, THINGS

- A. One of the guest speakers you heard was a licensed practical nurse. She (he) is in contact with PEOPLE a great deal of her (his) working time. Try to imagine you are an LPN. Put yourself in this role. Record in your daily log a conversation you had with a patient about her (his) prescribed medicine.
- B. The Laboratory Technician does routine laboratory tests and is responsible for the care and maintenance of all lab equipment. Today, in your science class you are going to assume the role of a laboratory technician. Try one of the activities below:
- a) Dr. Fernandez requests you to do a blood typing of Patient X so that he can be given necessary blood transfusions. Your teacher will supervise your work. Remember, as a lab technician you must also clean the equipment after you have completed your investigation.
- b) A series of blood cell slides are set up on the microscope.
- 1) Look carefully at each;
  - 2) Draw each slide as you see it;
  - 3) Label each drawing;
  - 4) Look at the diagram of blood cells your teacher will give you;
  - 5) Try to identify each blood cell slide you observed.

## JOB ROLE - SELF-ASSESSMENT

The objective of this self-assessment exercise is to help you come to some conclusions about which jobs you would like best. People have a sense of worth and well-being on their jobs if they can do the work well, and if they enjoy the roles that their jobs require.

The chart on the next page will help you begin to think about what jobs are most likely to offer you a sense of well-being. If you are unsure of the job description or the skills required, ask your guidance counselor. Work on this chart with your counselor. She can give you a lot of information and insight.

You may want to enter jobs and job descriptions on this chart throughout the semester.

JOBS I PREFER	JOB DESCRIPTION	DESCRIPTION OR ROLES REQUIRED - P.D.T	SKILLS I AM WILLING TO ACQUIRE	
			ROLES I CAN PERFORM	ROLES I AM WILLING TO LEARN
EXAMPLE:			SKILLS I NOW HAVE FOR THIS JOB	SKILLS REQUIRED

Show this chart to your guidance counselor at your next meeting. Ask her about other jobs you would like to know about based on your self assessment.

## OPTIONAL CONCLUDING ACTIVITY - ROLES AND WELL BEING

You have made a self assessment about the kind of job you would like to have. Some people never really get around to assessing themselves and find themselves confused, lost and unhappy. You are going to view a film called Death of A Salesman. It is based on a play by Arthur Miller. As you watch this film, think about the characters in terms of their own sense of well-being. What makes them feel the way they feel?

### Questions for Discussion:

1. What does Biff mean when he says: "I've always made a point of not wasting my life, and every time I come back here I know that all I've done is to waste my life."
2. Do you feel that people in this play really know themselves? Discuss some characters.
3. Discuss Biff's relationship with his father. Is there a conflict? What is it? How can it be resolved?
4. What do you think Happy's chances are for success in terms of how he defines success?

## MASTERY SHEET

1. A role is \_\_\_\_\_

2. Role playing is \_\_\_\_\_

3. Describe how a job is important to a person's sense of well-being.

4. One way to investigate different jobs is to look at them in terms of three things:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

5. Describe what you think Mental Health is.

6. How can environment affect the roles a person plays?

7. Identify some jobs that might appeal to you and explain why they do.

UNIT III  
TREATMENT

In units one and two you began gathering, recording and analyzing data. You probably remember that data is information. Once you collect data, you record it or write it down so that you can study or analyze it very carefully. When health workers diagnose or identify a disease or health problem, they must first gather, record and analyze data.

A health worker uses many different skills to diagnose a patient's problem. His records include many skills and must be very accurate. He (or she) may put his patient's life in danger if he does not use his skills to measure and record his patient's condition exactly.

If this unit is successful:

1. You will be able to define:

diagnosis	analyze
treatment	infer
<u>data</u>	record
  2. You will be able to demonstrate skill in three of the following areas:
    - a) Blood typing
    - b) testing for sugar in saliva or urine
    - c) testing for color blindness
    - d) taking body temperature
    - e) measuring height and weight
    - f) measuring calories
    - g) growing and analyzing germ cultures
    - h) measuring breathing--How much air can you breathe in?
    - i) planning a well-balanced meal
    - j) recording heart beat
  3. You will be able to use a Snellian or other eye chart to test vision and will be able to collect, record and analyze the data gathered.
  4. You will be able to make accurate observations and then make justifiable inferences from your observations.

## VOCABULARY

The following words are used in this unit. It is important that you become familiar with them.

treatment  
diagnosis  
inference  
data  
analyze

precise  
saliva  
calorie  
depth perception  
observation

germ  
culture

## TREATMENT - WHY IS IT IMPORTANT?

Today your class will brainstorm the following question:

How would your life be different if everything you saw was blurred and you didn't have glasses?

Remember, when you brainstorm there are no right or wrong answers so we do not criticize each other's answers.

A. LIST your answers below:

B. GROUP the items into categories

C. LABEL each category (give it a name)

## ACTIVITY

Your teacher will show the class some slides and photographs. The images on these slides and pictures have been blurred so that you can understand what it would be like to have poor vision and no glasses.

a) After you observe each blurred photo, try to say what you think it is about. Then, when the photograph is brought into focus, see if you guessed correctly.

b) How did you feel when you had difficulty identifying what was happening in the picture?

c) What do you think could be done for a person with blurred vision? What kind of treatment could a health worker give?

## ASSIGNMENT

Find 3 or 4 pictures or drawings of people with possible health problems. For each, first tell what the problem is. Then discuss why treatment of the condition would be important to the person's health and well-being.

OPTIONAL: Suggest possible kinds of treatment that might be used to correct each health problem.

## FACT SHEET - DIAGNOSING A HEALTH PROBLEM

A doctor may advise a person with poor vision to wear glasses.

But how does the doctor know exactly what is wrong with his patient's eyes so that he can prescribe proper treatment?

To find out what is wrong the doctor must give his patient many different eye tests. These tests and the doctor's measurements must be 100% accurate. If they are not, the doctor may think something is wrong that really isn't wrong. Then he may not take care of the real medical problem. The doctor must use his skills to collect exact or precise data.

After the doctor gathers data from the eye tests, he must record it. Once all of the data is recorded, the doctor can begin to analyze the test results to find out exactly what his patient's problem is.



## GATHERING AND RECORDING DATA

### THE EYE TEST

Today you will investigate one way doctors, nurses, and other health workers check vision with eye charts. You have probably taken many eye tests where you had to stand 20 feet away from the chart, cover one eye gently and read letters from the eye chart with your other eye. The letters are large at the top and get smaller and smaller as they near the bottom of the chart.

Your teacher or school nurse will demonstrate the use of the Snellen Eye Chart.

1. Choose a partner

- a) Measure his/her vision with the Snellen Chart.  
Record your Data.

Name of Student

Vision

- b) Ask your partner to measure your vision.  
Record your Data.

Name of Student

Vision

\*Be sure you are standing the proper distance away from the chart.  
If you are not, your results will not be correct or accurate.

## ANALYZING THE DATA

### THE EYE TEST

Your teacher will gather all of the vision test results from your classmates and will give them to you.

- 1) Using graph paper, plot a LINE GRAPH comparing vision results for girls against vision results for boys.

- 2) What is the average left eye vision for boys? Remember: to find an average, add all the figures together and divide by the number of boys.

Average left eye vision - boys \_\_\_\_\_

- 3) What is the left eye vision for girls?

\_\_\_\_\_

- 4) Generally, according to your data, who has better vision in your class - boys or girls?

**OPTIONAL ASSIGNMENT**

Do you think a person's vision gets better or worse with age?

Support your answer by recording below a description of the vision of at least six (6) adults. Be sure to use the data you collected from your class test results also.

## THE IMPORTANCE OF PRECISION

Your class has just completed several activities involving charts and vision examinations. The Eye Charts you used were most likely manufactured by large optical companies in the United States. The measurements between the lines, the size of the letters and distance between the letters are standard. When your vision is tested, these exact or precise chart measurements are very important.

To understand the importance of precision in health care, you are going to make and use your own Eye Chart. Decide on the letters and the Chart format. Then, "create" your chart using the necessary supplies. When your Eye Chart is completed, prepare to test it on some of your classmates.

A. Name of Student Patient \_\_\_\_\_

Vision results using "standard" chart \_\_\_\_\_

Vision results using "homemade" chart \_\_\_\_\_

Do the results agree?

B. Name of Student Patient \_\_\_\_\_

Vision results using "standard" chart \_\_\_\_\_

Vision results using "homemade" chart \_\_\_\_\_

Do the results agree?

C. Name of Student Patient \_\_\_\_\_

Vision results using "standard" chart \_\_\_\_\_

Vision results using "homemade" chart \_\_\_\_\_

Do the results agree?

Questions to consider - The Importance of Precision

1. Could you rely on the results gotten from your "homemade" chart?

Why or why not?

2. Were any of your results different from those acquired using the "standard" chart?

If so, explain why you think this happened.

3. Why is it very important to be precise in health care diagnosis and treatment?

## UNDERSTANDING WHAT YOU HAVE LEARNED

When you have completed the eye test activities on pages 8 and 9 of this packet, answer the questions below. Be sure to answer in full sentences. These questions will be the basis for a class discussion.

- 1) Why is it important to diagnose or identify health problems?
  
  
  
  
  
  
- 2) What are three (3) important steps health workers use to diagnose a problem?
  
  
  
  
  
  
- 3) Explain briefly why a health worker's diagnosis must be precise or exact.
  
  
  
  
  
  
- 4) Do you think you could get accurate and reliable results from an eye chart you made yourself? Why or why not?

## GATHERING, RECORDING AND ANALYZING DATA IN EXPERIMENTAL SITUATIONS

In the next section of this unit, you will try to perform and master three (3) experimental diagnostic skills. Many of these will have to be performed in the laboratory, others you can try right in the classroom or at home. All of the tasks are related to the human body and health care.

While you work on these investigations, remember to record your data very carefully. Imagine a hospital laboratory worker or nurse making incorrect records! Their patients' would really suffer! When you have completed each experiment, you will be expected to come to some conclusions about what you have done. In other words, you must analyze your recorded data.

## BLOOD TYPING

If, for some reason the amount of blood in a person's body is reduced through bleeding or disease, he may need a transfusion. This means he will have to take blood from another person. But not all people can safely give blood to each other.

There are four types of blood: A, B, AB, O. These types do not all mix together well so it is important to be able to test blood first to find out what type it is. A person with Type O blood is called the "universal donor". He can give blood to anyone. Almost 40% of people have type O blood.

Your teacher will give you all of the chemicals and information you will need to test for each blood type.

Record your data below:

1. SAMPLE #

2. MATERIALS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. PROCEDURE (WHAT DID YOU DO?)

4. RESULTS: \_\_\_\_\_  
\_\_\_\_\_

5. CONCLUSION(S):

## TESTING FOR BODY SUGAR

Our bodies take in, store and use sugar everyday. Sugar has several uses in the body. But sometimes we can have too much sugar in our bodies. Too much sugar can harm us so it is important to be able to periodically test the sugar levels in our blood and urine.

You may choose to test for sugar.

You will need a blue liquid called Benedict's Solution.

Record your data below:

1. SAMPLE #

2. MATERIALS:

3. PROCEDURE:

4. RESULTS:

5. CONCLUSIONS:

## TESTING FOR COLOR BLINDNESS

Some people, almost always men, are color-blind. A color-blind person has difficulty identifying the color red. He sees everything in shades of grey. Why would it be important to test for color blindness? Well, a color-blind person learning to drive might have difficulty, for example, knowing which stop light was red. Imagine the difficulty he might face?

You can test for color blindness with ready made vision charts.

Record your data:

### 1. TEST FIVE FRIENDS FOR COLOR BLINDNESS

- A) NAME \_\_\_\_\_ RESULTS:
- B) NAME \_\_\_\_\_ RESULTS:
- C) NAME \_\_\_\_\_ RESULTS:
- D) NAME \_\_\_\_\_ RESULTS:
- E) NAME \_\_\_\_\_ RESULTS:

### CONCLUSIONS:

## BODY TEMPERATURE - READING A THERMOMETER

Normal body temperature for most human beings is 98.6 on the Fahrenheit thermometer. When we are sick our temperature may go higher than 98.6 showing that we have fever. We read an oral thermometer by looking at the mercury level inside of it, after we have kept it under our tongues for a period of time, (usually about 3 minutes).

Record your data below:

1. Name \_\_\_\_\_

Temperature \_\_\_\_\_

2. Take the temperatures of at least 2 friends.

Name \_\_\_\_\_ Temperature \_\_\_\_\_ Normal? \_\_\_\_\_

Name \_\_\_\_\_ Temperature \_\_\_\_\_ Normal? \_\_\_\_\_

3. Draw a thermometer below. Be sure to carefully record the numbers.

## MEASURING HEIGHT AND WEIGHT

In Unit I you measured the heights and weights of your classmates. If you need more practice in completing this skill successfully, refer back to Unit I and re-complete the assignment listed.

## GROWING GERM CULTURES

Germs are living things that are so small you can only see them with a microscope. Some germs are harmless but some cause disease or even death. They may be spread from one person to another by food, water, air or soil. Diseases such as the cold virus and malaria are caused by germs. When harmful germs enter our body, they cause infections. Under the right conditions in our bodies, germs grow and multiply quickly. In this experiment you will grow germs and will record the conditions that made them grow quickly.

Materials: \_\_\_\_\_

Procedure: Dishes A1

A2

Dish B1

B2

Dish C1

C2

Results: Dishes A1, A2 \_\_\_\_\_

B1, B2 \_\_\_\_\_

C1, C2 \_\_\_\_\_

Conclusions:

Draw all of the petri dishes after 1 week: Be sure to label each drawing.

## MEASURING CALORIES

After you eat and the food goes through digestion, heat is produced as the food is burned. If we measure the amount of heat given off when food is burned, you can measure the energy in that food. The heat energy given off is measured in calories. A calorie is the amount of heat needed to raise the temperature of 1 gram of water one degree centigrade.

To find this a) measure how many grams of water you have; and  
b) how many degrees the temperature of the water is raised.

For example: The temperature of 6 g. of water is raised  $4^{\circ}$  C. How many calories are required to make this temperature change?

For the number of calories: multiply  $6 \times 4 = 24$ .

Your teacher will now give you several other problems to work out. In each, find the number of calories needed to raise the temperature of the water.

1.

2.

3.

4.

5.

## MEASURING BREATHING - How Much Air Can You TAKE IN?

Today we hear a lot about how air pollution and cigarette smoking can damage our lungs and shorten our breath. The amount of air we take in when we breathe is important to our health. The oxygen in the air we breathe is used by all of the cells in our bodies.

How much air do you take in when you breathe? You can measure this easily by conducting a simple experiment. For this experiment you will need a pan, a one-half gallon jar, a rubber hose and a glass or metal flat plate.

### Purpose of the Experiment

### Materials

### Procedure (what you do :)

1.

2.

3.

4.

5.

6.

7.

Results:

Conclusions:

Questions:

Why is it important to take deep breaths?

## PLANNING A WELL-BALANCED MEAL

We all must have food in order to live. Good food planning is important for good health. Food is needed by our bodies to give us energy and it helps our cells grow and repair themselves.

Nutrients are the food substances that are important for the growth of body cells.

- They are:
- 1) Carbohydrates - high energy foods like sugar and starch;
- 2) Proteins - used for building tissues;
- 3) Fats and Oils - high energy goods but not as easy to digest and be used by our bodies as carbohydrates;
- 4) Minerals - Iron, Calcium and Phosphorus found in the foods we eat;
- 5) Vitamins;
- 6) Water.

Every balanced diet must have nutrients in the correct amount. Age, how active a person is, sex and body size and build help decide how much of each nutrient a person needs.

Your teacher will give you a list of the major vitamins and the foods they can be found in. You will also receive a chart listing the four basic food groups.

Study these carefully. After your class discussion, try to plan three well-balanced meals (breakfast, lunch, dinner) for someone just like you.

### Questions:

Using your reference charts, try to diagnose which nutrient is lacking in the diet of each person below:

1. Mary had not been eating properly. Her skin was becoming very sallow and also was dry and flaky
2. John had badly sore and bleeding gums.
3. Isabelle always seemed to be tired lately. She didn't seem to even have enough energy to play a game of tag.

4. All of a sudden, Jose realized that he had night blindness.
5. When the doctor's test results came back, Maria discovered that she was anemic, that is, her cells were not getting enough oxygen.

OPTIONAL - Planning a Well-Balanced Diet

1. Every day newspapers carry planned dinner menus. Study one and see if it contains all of the necessary nutrients for a well-balanced diet.
2. Read labels on food wrappers. What do they tell you about the food inside?
3. List all the foods you eat in one day. Then group each according to the nutrient group it probably could belong to. Did you have a well-balanced diet?

## RECORDING HEART BEAT

You may remember measuring your heartbeat in Unit I. Remember, you used an instrument called a stethoscope. After you exercised, you probably remeasured your heartbeat and found it to be a lot faster. Why? Exercise makes your body have to respond faster so your heart must speed up and send more blood and oxygen to your cells. This produces the energy you need to do the exercise.

This time, use the stethoscope and the stop watch to record your own heartbeat and the rate of heartbeat of other students in your class.

Design several different activities that might force your heart to pump either faster or slower than normal. Check the validity of your activities by testing them:

A. Your heart rate (in one minute)

- |              |         |         |
|--------------|---------|---------|
| Classmates - | a) home | b) Rate |
|              | a) home | b) Rate |
|              | a) home | b) Rate |

B. Activities:

### III. MAKING OBSERVATIONS AND INFERENCES

You may remember that in Unit II: Mental Health, you were given several photographs of peoples' hands. Your goal was to try to identify what kind of work each person did by observing the appearance of his or her hands. You imagined that a person worked at a particular job because of the way his hands looked. You were making an inference. When you infer (in-FUR) something, you go beyond simple observations. You imagine something that may or may not be true. For example, you may infer that a man with large, rough, calloused hands works at a lumberyard or construction site. You observed that his hands are rough and calloused, but you inferred that his job in heavy manual work is the reason for the appearance of his hands. Actually, there can be many reasons for the conditions of his hands. Can you think of some?

## MAKING INFERENCES

Your teacher will show you several photographs. In each one you can observe many things and you can infer things from your observations. Divide this page into two columns. Head one column "observations" and the other "inference". Describe each observation you make in the first column. In the other column describe the inference(s) you can make from your observations.

Be sure to label each set of observations and inferences with the correct photograph number.

## MAKING INFERENCES

It is difficult to make accurate inferences. You can practice making inferences every day. Think: What inferences have you made outside of the classroom today?

Your class will discuss the inferences you made about the photographs. Try to answer these questions before your discussion.

1) What is the difference between an observation and an inference?  
How can you tell the difference?

2) Can you always prove inferences?

3) Why are observations important?  
Why are inferences important?

4) Is it possible for two people to make similar observations but to arrive at different inferences?

5) Which are easier to make - observations or inferences?

OPTIONAL ACTIVITY

Record below as many observations and resulting inferences that you can remember making yesterday (or last week).

## HEALTH CARE CONCEPT GAMES

Today your class will begin to play some games that center around health care treatment and diagnosis. Your teacher will explain all of the rules and the scoring procedures. It will be your task to analyze recorded data and to arrive at some logical conclusions as to the causes and names of some diseases and other health disorders.

MASTERY QUIZ

UNIT IV  
POLLUTION IN OUR ENVIRONMENT

## POLLUTION IN OUR ENVIRONMENT

In this unit, you will learn about the relationship between pollution in the environment and your health. There are several different types of pollution that can harm your health and well-being. Air pollution from factory furnaces and automobile exhausts, dust in the air caused by garbage, strong winds and erosion of land create health hazards. Garbage and trash littered over land not only destroys scenic beauty but also threatens your health. Can you imagine drinking water polluted by factory waste, litter, oil spills and household laundry detergent? People, everyday in the U.S., are drinking water that is not really pure. Another type of pollution is sound pollution. Any student who lives in the city can tell you that he hears many different kinds of sounds during the day. Some sounds are quiet and restful while others are unpleasant noises that can hurt your ears.

This unit will concentrate on air pollution. If this unit is successful, you will be able to:

1. define:

<u>pollution</u>	<u>noise</u>
<u>environment</u>	<u>inversion</u>
  2. list at least 4 sources of air pollution
  3. describe at least 4 harmful effect of air pollution to people and property
  4. define inversion and demonstrate the causes and effects of inversion
  5. think up and suggest some ways to stop air pollution
  6. name at least 3 other kinds of pollution and give an example and source for each one

## WHAT ARE THE TYPES OF POLLUTION?

Your teacher will show you a group of 10 photographs. Look at each one carefully and then list below all of the types of pollution you see.

What are some of the sources of pollution you can see in the pictures.

Match each type of pollution to its source.

### TYPES OF POLLUTION - ACTIVITIES

1. Using magazine pictures and other photographs or drawings, make a collage showing the causes and effects of pollution in our society.
2. For one week, read a local newspaper and cut out any article relating to pollution in our environment.

Notice the air pollution index reading on the weather page.

3. Think about and write a short essay about this open-ended question below: (Remember, there is no right or wrong answer. Stretch your imagination and be as creative as possible.)

How would your life be different twenty years from now if:

- A. Pollution in the air made the temperature  $100^{\circ}$  all the time;
- B. All water, including rain, became polluted;
- C. Land pollution and erosion were so severe that people could not grow fresh fruit and vegetables.

## AIR POLLUTION IN OUR ENVIRONMENT

## FILM - AIR POLLUTION

Your class will observe and study a film called Air Pollution. As you view the film, think of the answers to the following questions. These questions will be the basis for your class discussion:

1. According to the film, what exactly is pollution?
  2. What are some causes of pollution that the film describes?
  3. Name at least 3 damages to our environment air pollution can cause.
  4. List below some of the remedies suggested by the film to clean up air pollution.

What do you think of each remedy suggested?

UNIT PROJECT

You will begin a pollution notebook/scrapbook today. You will be expected to enter pertinent data regarding sources of pollution, their effects and suggested remedies for checking pollution in our community.

You may use television programs, advertisements, newspapers, magazines and other written sources, interviews as well as records of your own observations. Feel free to include your own artwork, cartoons or creative writing.

You will not be evaluated on the amount of material submitted but on the thought and care with which you make and discuss each entry.

## AIR POLLUTION EXPERIMENTS

You read and hear a lot about the dangers of air pollution. Perform these experiments carefully and you may understand a lot better why air pollution is harmful.

- A. 1. Weigh a kleenex or absorbant tissue. Record its weight on the space below:

---

Now, place the tissue over the exhaust pipe of a car or bus. Fasten it with a rubber band. Leave it on for one or two minutes while the motor is running. Then remove it and examine the tissue for particles. What do you see?

What do the particles look like?

How do they feel? How do they smell?

Now weigh the tissue again. Does it weigh more or less now? Why?

2. Try the experiment again but leave the tissue on for a longer period of time. Is there additional residue?  
3. THINK ABOUT WHAT YOU HAVE LEARNED.

You have inspected and measured the amount of residue on

a single tissue that absorbed automobile exhaust for only a few minutes. In 1973, there were 120 million (120,000,000) cars on the road. You can imagine how much pollution goes into the air every minute if you multiply the amount of exhaust you found in just one minute times the 120,000,000 cars on the road in America.

Just for fun, use the space below to do your arithmetic.

- B. If someone in your family smokes, ask him to blow some smoke from a cigarette through a tissue or handkerchief. Observe the results.

What do you see?

How does it feel?

How does it smell?

What do you think this does to the air in the room and to your lungs?

- C. Your teacher will give to you and explain how to use a Ringleman's Smoke Chart. With this chart, you will be able to measure the amount and thickness of smoke in an area.

Your assignment, once you learn how to use the chart, will be to form teams and to make and record observations about smoke pollution in your neighborhood.

Be sure to carefully record each location, day and time of day.

These factors are very important when you analyze your results.

Make a set of graphs showing your results. Which areas are most polluted? Which were least polluted? Why?

D. Automobiles, factories, power plants and garbage disposals give out exhausts that contain chemicals called sulfur and nitrogen gases. These gases have a harmful effect on our bodies and also on the building materials of our homes and monuments, such as marble and stone. The following experiment will help you see the harm these gases can cause.

Place a clam shell in hydro-chloric acid. This is a weaker acid often used in laboratory chemical reactions. Its chemical symbols are  $H_2SO_3$ . Hydro-chloric acid contains sulfur dioxide gas.

Leave the shell in the acid for 15 minutes. What happens?

After 30 minutes, what happens?

After leaving it overnight, what happens?

What can you conclude about the effects of sulfur dioxide on some solid surfaces?

E. Find out just how dirty the air is in your neighborhood by doing these simple experiments.

Spread Vaseline over a piece of cardboard and place it on an outside windowsill. Dirt particles will collect on it.

Draw the cardboard after one day.

Name as many of the dirt particles as you can (dust, insects, ash).

Draw the cardboard after 3 days.

How dirty is your air? Write a short paragraph based on these experiments.

F. The dirt, dust and other particles that pollute the air also pollute water.

Try this experiment:

Put a pan of water outside in your yard for a few days. Then boil off the water and see how much dirt is left at the bottom of the pan.

Name some of the particles you see.

G. Take a small shopping bag and hold it over your mouth as if you were going to blow it up. Hold your nose and breathe 10 or 12 times through your mouth into the shopping bag, using only the air that is in the bag. How do you feel?

Why?

How does this relate to pollution?

AIR POLLUTION - OPTIONAL GROUP ACTIVITIES

1. Ask an auto mechanic or pollution control board member to discuss with the class the new pollution control devices on cars and trucks. What do they think about the effectiveness of such devices?

Do these devices cause other problems?

Have the mechanic or control expert give suggestions themselves about how to cut down on air pollution from gasoline engines.

2. Write a letter to the head of Hartford's Water Department. Ask him or her to tell you where your water supply comes from and what the city is doing to keep it pure and clean enough for you to drink.

## READING - RANGER RICK'S AIR POLLUTION

Read this small magazine published by the National Wildlife Federation. Then thoughtfully answer the questions below:

1. What is smog? What causes it?

2. How many gasoline engines can you find in the pictures on pages 2 and 3? Name them:

3. How do gasoline engines pollute the air?

4. How can a garage mechanic help cars from polluting the air?

5. What is the 3 month plan? Describe it.

6. What other things, besides cars, pollute the air?
7. On page 6, Jimmy uses a chart to measure air pollution. How does it work?
8. Does all the pollution in the air collect on the vaseline covered jar? Why not?
9. What do you think you can do about air pollution? Write some suggestions below:

### BUILDING AN INVERSION BOX

An inversion box is a box that will help you study the air. Man-made pollution changes the way the air acts. You can see and study these changes with an inversion box.

To make an inversion box you will need:

- a. a cardboard box
- b. clear transparent plastic wrap, long enough to cover one open side of your box
- c. tape
- d. two thermometers
- e. cigarettes and matches
- f. ice
- g. hair dryer
- h. black tempera paint
- i. flashlight

Your teacher will demonstrate how to make an inversion box. She will form you into teams so you can make your own. Your class will do several experiments with inversion boxes.

### ACTIVITIES

1. Look up the word inversion in the dictionary. Write its meaning below:

You have learned that an inversion occurs when a layer of warm air lies on top of cooler surface air.

A. Answer the following questions in your class discussion:

1. Why does hot air rise and cool air sink?
  2. Why is the air often most polluted early in the morning, between 6-9a.m.?
  3. True/False: Pollution is trapped close to the earth during inversion.
- B. Have the class appoint a secretary to write for more information on pollution to the Connecticut Air Conservation Committee, 45 Ash Street, East Hartford, Connecticut 06108.

FILM - TAKE A DEEP BREATH

All types of pollution are harmful to a person's health. The film you will see today shows some of the damage air pollution can cause. A person's respiration or breathing can really be effected by air pollution. Also cigarette smoking can cause shortness of breath and other respiratory problems.

Watch the film closely. Be sure to observe the hospital and other health people involved in helping people with respiratory problems. Note also the other body systems effected by pollution.

DISCUSSION

You have seen throughout this unit how dangerous air pollution can be. Many science fiction films about the future show men and women wearing gas masks in order to breathe because the air is so thick and polluted. If we want these stories to be only science fiction and not reality, we must all pitch in to help stop pollution.

WHAT WILL YOU DO?

NEEDS FOR THIS UNIT

1. 10 photographs showing different kinds of pollution.
2. Multiple copies of Ranger Rick's Air Pollution. (See Teacher's Guide for details)
3. Film - Air Pollution.
4. Film - On Health, Air Pollution and Respiration.  
Suggested film - Take A Deep Breath.
5. Clam Shells

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ALLIED HEALTH FIELD

SEVENTH GRADE

Operation TACT  
Field Test Curriculum  
1973-1975  
Teachers' Handbook

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## ALLIED HEALTH CURRICULUM PROCESSES

1. Observing
2. Measuring
3. Interpreting Data
4. Communicating
5. Comparing and Contrasting
6. Forming Concepts
7. Inferring and Generalizing
8. Predicting and Explaining
9. Applying Generalizations
10. Hypothesizing
11. Experimenting
12. Offering Alternatives

Adopted from:

Process of Science Curriculum AAAS

Fraenkel, Helping Students Think and Value. Prentice Hall, 73.

Hilda Taba, Assorted Curriculum Resources.

By: Susan S. Miller and  
Margaret C. Collins

1-1

INTRODUCTION:

WHAT ARE HEALTH CARE NEEDS?

GENERALIZATION:

Within a community there are many different health care needs.

SUB-GENERALIZATION:

Who services the community?

In a given community, there are many agencies and clinics which service, or fail to service, community members' needs.

## 7TH GRADE TEAM

### INTRODUCTION TO HEALTH

#### LEARNING PROCESS

#### MATERIALS

#### NOTES

#### ACTIVITIES

ACTIVITIES	NOTES	MATERIALS
<b>Observational Skills</b>		
1) <u>Introduction to Unit:</u>		
a) Presentation of picture sequence illustrating a health need, or b) Staged incident illustrating a health need.	Teacher should be calling students' attention to each skill/learning process as it is performed.	Picture sequence or staged incident.
	Define process.	Call Hartford Health Department Use of David C. Cook Publishing Company
	<u>Question:</u> What can you tell me about (incident or picture). Stress only that which is observable. Probe any answers which go beyond fact to inference.	It is suggested that students can keep a <u>skill checklist</u> in which each activity is entered under the appropriate skills it uses. As skills become used, they can be entered on the checklist also.
	<u>Summary:</u> This person had a need for medical help. We have a series of pictures which show other health needs. Based on <u>observation</u> , can you help me list, on the blackboard, possible health needs?	Pictures from the Bryant Company At the end of each unit or group of units, students can review which activities (and, therefore, which skills) they enjoyed doing the most.
	<u>List:</u> Health care needs observed in the pictures.	Photos Blackboard
<b>Taba: Concept Formation Strategy</b>		
	<u>Group:</u> What 2 or 3 items can you put together in a group? Probe for the reasons behind the relationship. Then have students categorize the rest of the items. For each, probe the relationship.	This is useful in later career values clarification and in making realistic career decisions and projected career goals.
		Blackboard

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

#### Label: The groups

What titles or names could you give each category?

Pass out picture series to students one photo to each small group. As a team, have the students write one or more captions for the group's photograph.

Select some students to make bulletin board display labels of category names.

Remind students to enter and record all lists, categories and labels in their unit packet.

Extra Credit Assignment: Collect pictures or photographs to display on the bulletin board under appropriate category labels. Provide old magazines for students to use during any free time.

#### Discussion and Summary:

Point out the Concept Formation Strategy that was used - listing, grouping, labeling. It will be used again.

Review types of health needs discovered in the investigation of the pictures.

Photos  
Oaktags  
Marker Pens  
Bulletin Board  
Unit Packets  
Magazines

30 copies of the Hartford Times and Courant for two weeks

Magazines

Student Photography input

## LEARNING PROCESS

## ACTIVITIES

## NOTES

## MATERIALS

*Observing, measuring, and interpreting data.*

2) Student reactions to the school health facilities.

- a) Open class discussions of their experiences.
  - b) Develop experiences into skits.
  - c) Develop student data questionnaire - interpretation
  - d) Develop family data questionnaire - interpretation
    - What do you find in a medicine cabinet?
    - Anyone in your family had an operation lately, etc.?
  - e) Develop community data questionnaire - optional
- 113
- 3) School Nurse orientation of prevailing school health facilities.
- School Doctor orientation
- Class discussion on attitudes after this orientation.

Student Data Bank Sheet

How many wear glasses?  
How many had tonsils out,  
etc.?

What do you find in a  
medicine cabinet?  
Anyone in your family  
had an operation lately,  
etc.?

School nurse and school  
doctor

School Speech Therapist

Charts and Equipment Used

Health forms

Refer students to the appropriate pages in  
their unit packet. Review procedure for  
investigation.

## LEARNING PROCESS

### Observing Measuring Interpreting Data Experimenting

#### ACTIVITIES

Refer students to appropriate pages in their unit packet. Review procedures for investigation.

Review vocabulary: data, precise, analyze, stethoscope

This activity is designed to familiarize the student with gathering, recording and analyzing data.

#### Inferring

It is suggested that 5 students leave the classroom and that 2 of them perform a simple exercise (push-ups, running in place, etc.) for one minute. When they return to the classroom, the other students should be able to observe and record the symptoms of this activity. Of course, these observations will not be scientifically precise. A distinction between observation and measurement must be made here.

#### Predicting

In the discussion following this initial activity, it is hoped that the students themselves will suggest ways to more scientifically precise data gathering such as the taking of pulse, measuring heartbeat or measuring respiration rate, etc.

#### NOTES

#### MATERIALS

5 Stop Watches  
5 Stethoscopes  
Unit Packets

Now conduct the same experiment using these more precise measurements (5 new students) and compare the conclusions drawn.

## LEARNING PROCESS

### ACTIVITIES

#### Comparing and Contrasting

Interesting variations can be made on the initial experiment such as having one student exercise for  $\frac{1}{2}$  minute and the other for 1 full minute. Have the students discuss with you the problem they may wish to set up.

#### Hypothesize Predict

One way to convey the importance and idea of precision in data gathering would be to ask the students what would happen if the class measured the pulse rate of the returning students at different points in time rather than measuring the pulse of all 15 at the same time.

Hypothesize then perform experiment. Have the students record data and then they should explain what happened and why.

- 4) Student observation of community health needs.
  - a) Observing what they see on their way to school each day.
  - b) Observing what they see in their neighborhood.
- 5) Identification of community health facilities and services available to them.
  - a) Where do you go if you have a serious accident?

### NOTES

### MATERIALS

LEARNING PROCESSACTIVITIESNOTESMATERIALS

- b) Where do you go if you have a toothache?
- c) Where do you go if you need an operation?
- d) Where do you go if you need a blood test?
- e) Where do you go if you need a physical exam?
- f) Where would you go for some health information?
- g) Where would you go if you're hooked on drugs?
- h) Where would you go if you had food poisoning?
- i) Where would you go if you had been bitten by a dog?
- j) Where do you go if a child is born with a lot of brain damage?
- k) Whom do you call if an emergency presents itself?
- l) Where do you go to learn to walk again after a crippling accident?

LEARNING PROCESSACTIVITIESNOTESMATERIALS

- m) What would you do if you stepped on a rusty nail?
- n) If there were an outbreak of polio in your area, what could the community do?

**Taba:** Concept Formation Strategy

List: Health care facilities observed in their answers.

Group: What 2 or 3 items can you put together in a group? Probe for the reasons behind the relationship. Then have students categorize the rest of the items. For each, probe the relationship.

Label: The groups.

What titles or names could you give each category?

## UNIT II

### ALLIED HEALTH: MENTAL HEALTH

GENERALIZATION: A person's sense of well-being comes from feeling adequate and worthwhile in the roles he chooses or must play in relation to other people.

SUB-GENERALIZATION: People have a sense of worth and well-being on their jobs if they can do the work well and if they enjoy the roles that their jobs require.

## EARNING PROCESS

## ACTIVITIES

NOTES

## MATERIALS

## INTRODUCTION TO UNIT - WHAT IS A ROLE?

Ask students to collect and analyze data on jobs and job roles.

- 1) Observe 5 photographs of hands - Probe,  
at first, for observations only -  
What can you tell me about each pair  
of hands?

Then ask for inferences - What do you think this could tell you about the person's job?

### **Observation**

## *Observation Taboo-Hand Strategy*

119

## *Comparing/Contrasting Taba-Concept Formation*

People, Data, Things

## Communicating

Discussion - How do the jobs or activities done by a person's hands place him or her in a certain job role?

- List them all.
- Make comparisons.**
- If desired, students can list, group and label activities for discussion.
- Introduce concept of people, data & things as a means of differentiating between

Handbook

## Photographs Unit Workbook

Handbook

Handbook

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

Summary - Role - definition - compare to actor's role.

Strategy - review and point out people, data, things strategy. It will be used again.

### Interpreting

#### Back Up - People, Data, Things

Math: Percent  $\%$   
What % of mother's time is spent with people?

with data?

with things?  
Rate other jobs. Work out percent.

IDENTIFYING ROLES - Activities to strengthen understanding of job roles.

### Observing

a) Show a short Mickey Mouse or Peanuts cartoon.

Cartoon available through Sue Miller

Cartoon-motion  
picture projector  
Peanuts-newspaper

### Inferring

Probe for the relationship between the major character and people, data, things.

What type of role does he play?

- b) Record two short job descriptions. Briefly describe each position and its contact with people, data, things. Omit the job title in the description. Have students infer the job role from the data presented.

### Communicating Inferring Interpreting

- c) Reading - Hospital People - Choose a short selection. Read and discuss. Stress life style of the worker.

### Hospital People

Tape recorder  
Job descriptions  
Workbook

MATERIALS

NOTES

ACTIVITIES

Communicating  
Comparing and Contrasting

- d) Have students write Want Ads outlining different occupational roles.

- e) OPTIONAL - Have students create a poster, sketch or cartoon illustrating one of the following job roles -

- 1) Military man
- 2) Housewife
- 3) Student
- 4) Musician
- 5) Nurse
- 6)

LEARNING PROCESS

Want Ads from COURANT, TIMES as samples.

Poster paper  
Colored pencils  
Rulers

A)  
Explaining  
Comparing and Contrasting

WHAT ROLES AM I EXPECTED TO PLAY?

Handbook -  
Pages 8, 9

- 1) Make students aware of conflicting roles within the same person. Ask them to think about and list the people who make demands upon them or the people who they wish to please. They must identify the demands.

Communicating

Discussion - Which demands or pressures are in conflict? Why? How does each demand force you into a certain role? Can roles conflict? How do conflicting roles alter a person's outlook?

- 2) Role Model Wheel - Ask students to create a role model wheel based upon the conflicting demands they placed on their list.

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

#### Communicating

Discussion: What are my expectations of myself in terms of my family, friends, etc.?

- B) THE ROLE OF A STUDENT - Deals with all three - people, data and things. Attempt to familiarize the individual with all aspects of working/business contact.

Ask students to note several pressures or demands they experience as students. List them. Look at all responses in terms of people, data, and things.

Prepare students for role-playing session. Use video-tape recorder.

Role play some of the student role situations that were entered on Page 10 of the workbook.

#### Offering Alternatives Comparing/Contrasting

- Ask students to:
- Fill out the Role-Playing Observation Data Sheet for each episode they view.
  - Think of alternative endings and solutions for each situation. Compare ending.

Stress the roles played in each enactment as well as the perceived expectations of others.

Handbook -  
Page 10  
  
Video-tape  
Role-Playing  
Observation Data  
Sheet - Page 12  
and 13

Shaffter, Fannie and  
George, "Role Playing  
for Social Values" in  
Joyce, Bruce R. Three  
Strategies for Teaching  
Social Studies, Science  
Research Associates,  
1972

LEARNING PROCESSACTIVITIESNOTESMATERIALSROLES AND THE ENVIRONMENT

Read selection from Black Boy by Richard Wright, pages 15-17.

Direct students to discussion questions on page 18 of Student Handbook.

How does environment help shape the roles we must play?

(English - What is an Autobiography?)

People  
Data  
Things

WHAT ROLES DO I LIKE BEST?

## a) DATA COLLECTION - TIME CHART

- 1) Reintroduce students to People, Data, Things.  
Ask them to trace a day in their lives.

What roles do I like best?  
Who did I interact with?  
What portion of my day was spent with people? with Data? with things?

b) Back Up

Math problem - based on time chart,  
what % of time is spent with people,  
data, things?

Make a circle graph showing your results.

Student Handbook  
Page 19, 20

MATERIALS

NOTES

ACTIVITY

LEARNING PROCESS

Predicting and  
Explaining

Ask students to build an imaginary  
time chart depicting an ideal day.

Communicating  
Comparing/Contrasting

c) INTERVIEWING SEVERAL ALLIED HEALTH  
PROFESSIONALS

Select one representing each life  
style. Have students interview  
in terms of people, data, things.  
Focus on Life-style as it relates to  
well-being.

After the students develop the inter-  
view instrument, refer them to the  
Job Role Chart on Page 22.

Observing

Suggested Guest Speakers:

- 1) LPN - deals primarily with  
people.
- 2) LAB TECHNICIAN - Data-perhaps  
one on a bloodmobile or a  
technician in a pollution  
control lab.
- 3) AMBULANCE DRIVER - Things -  
ELECTROCARDIOGRAM TECHNICIAN  
and  
PHYSICAL THERAPIST - works with all  
three.

OPTIONAL ACTIVITIES - relating to Guest  
Speakers and concept of People, Data and  
Things.

See Page 25 of Unit Handbook.

These activities can be used as back-up  
exercises:

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

**Communicating**  
a) Record a conversation between an LPN and a Patient-English Writing Class

Unit Handbook  
Page, 25

**Experimenting**  
**Measuring**  
**Recording**  
**Observing**  
**Interpreting Data**  
**Explaining**

Slides and blood typing solution available through TACT office

### JOB ROLES - SELF-ASSESSMENT

Try to get the students to look at different occupations in terms of roles and skills needed.

**Offering Alternatives**  
**Predicting and Explaining**

Health Careers  
Guidebook (HEW)  
You can work In  
The Health  
Services  
John Day, Co.,  
N.Y.

**Recording**

Ask students to work with their guidance counselor on the assessment of jobs - page 27.

Unit Handbook  
Pages 26, 27

The list on page 27 can be updated periodically as the students are introduced to other careers.

**OPTIONAL - CONCLUDING ACTIVITY -**  
**DEATH OF A SALESMAN**

Film to be ordered by  
TACT  
film

Discussion of roles and Well-being - Possible discussion questions are listed on Page 28 of Student Handbook.

**UNIT III**  
**TREATMENT**

## UNIT III: TREATMENT

### LEARNING PROCESS

#### ACTIVITIES

#### NOTES

#### MATERIALS

#### Student handbook

Vocabulary lists, introductory statement and objectives may be found in the student handbook

pages 1 and 2.

#### Unit Objectives -

1. Students will be able to define:

diagnosis data infer  
treatment analyze record

2. Student will demonstrate skill in at least 3 of 10 areas which stress diagnostic gathering, recording and analyzing data.

3. Student will be able to use a Snellen or other eye chart to test vision and will correctly gather, record and analyze data taken from this test.
4. Student will be able to make accurate observations and justifiable inferences from his observation.

## LEARNING PROCESS

### ACTIVITIES

#### I. INTRODUCTION TO THE UNIT:

Why is accurate diagnosis and subsequent treatment of health disorders or problems necessary for good health?

### Divergent Thinking Strategy

#### Suggested Question:

How would your life be different if everything you saw was blurred and you didn't have glasses?

### Communicating Inferring Alternatives Hypothesizing Forming Concepts

Strategy:  
Blackboard to record all responses.

- a) Listing
- b) Grouping
- c) Labeling
- d) Evaluating

Responses (optional)

This strategy allows student to derive the importance of proper health care (more specifically, eye care) and the necessity for treatment of problems, etc. It also induces creativity and stimulates class discussion.

Categorizing lead to concept formation.

- Review of Strategy Rules:  
Brainstorming
  - a) Accept all responses; no criticism.
  - b) Don't repeat or rephrase responses.
  - c) When students are temporarily out of ideas, remain silent and allow them to think;
  - d) encourage hitchhiking.
  - e) Use a follow-up activity.

LIST all responses on board. Then ask students to GROUP the items that seem to go together.

Probe for the reason(s) behind their relationships.

### MATERIALS

### NOTES

Divergent Thinking  
Teacher's Handbook  
For West Research  
Laboratories

## LEARNING PROCESS

### ACTIVITIES

### NOTES

LABEL each group. Give it a title that fits all of the members of the group.

#### Recording

#### MATERIALS

Ask students to enter all lists, groups and labels in their handbook on the appropriate page.

If desired, proceed to the fourth step in the strategy—Evaluation. Ask students to set up an evaluation criteria and then to measure each response against that criteria. In this way, less creative and irrelevant responses can be weeded out.

#### Compare/Contrast

This 4th area is optional.

#### Observe

#### Student handbook

Show the class a series of blurred and vaguely distinguishable photographs and slides. Explain that this is to simulate poor vision that goes untreated (i.e. - no glasses).

#### Observation Recording

#### Photos Slides Projector Student handbook

a) Ask students to observe each photo or slide and to record what he or she thinks the picture or photograph is of. Then bring photos into focus to test the accuracy of the students' guesses.

Effective  
Domain  
Communicate  
Explain

b) Question for students to think about and discuss:  
How did you feel when you had difficulty identifying what was happening in the picture?

Since all areas of health care require a certain degree of empathy and worker-patient identification, this question (b) will help student to begin to consider the feelings of disabled or temporarily incapacitated people.

**LEARNING PROCESS****Hypothesizing  
Inferring  
Alternatives****ACTIVITIES**

- c) What do you think could be done for a person with blurred vision?  
 This question should direct students toward the concept of treatment of health disorders.

Once a disorder is diagnosed, what are the treatment alternatives?  
 Here, too, an open brainstorming session to answer this question is recommended.

**Observation**

Assignment - Find at least 3 or 4 pictures or drawings of people with possible health deficiencies or disorders.

1. Ask students to identify possible health problems shown in the pictures.
2. Then discuss why treatment of each condition noted in #1 would be important to a person's sense of well-being (Unit II - Mental Health) and health.
3. Ask students to suggest possible kinds of treatment for each condition.

**Interpretation  
Record Keeping  
Explaining  
Communicating****Hypothesizing  
Inferring  
Alternatives****NOTES****MATERIALS**

Student handbook

Magazines  
 Newspapers  
 Books  
 Pictures  
 Photos  
 Drawings

Refer to Unit II - Mental Health to review concept of "well-being".

**II. DIAGNOSING A HEALTH PROBLEM**

- A. Fact Sheet - The fact sheet in the student handbook explains briefly the application of data collecting, record keeping and analysis in health care diagnosis and treatment.

Student handbook

LEARNING PROCESSACTIVITIESNOTESMATERIALS

Students should carefully read and discuss the selection. In later sections of the unit, they will be expected to perform experiments and to follow the 3 step data process.

ObservationB. Gathering and Recording Data  
The Eye TestObservation  
Analyzing  
Recording  
Measuring

- Demonstrate the proper use of the eye chart as a means of diagnosing eye malfunction or disorders in vision. Be sure to call students' attention to:
- a) distance away from chart they must stand;
  - b) necessity of gently covering each eye.
- Allow students to inspect the chart, note the size of the letters and their distance from each other.
- Then ask students to pair off and to test each other's vision. To:
- a) Gather vision data
  - b) Record it in the student handbook
  - c) Analyze it. Does your partner seem to have 20/20 vision or did he or she have problems reading the chart?
- C. Analyzing Data
- Collect all of the data gathered by the students in the class. Then have

Eye Chart  
School Nurse Student handbookEye Chart  
Graph Paper

## LEARNING PROCESS

Recording

Analyzing

Compare/Contrast  
Inferring  
and  
Explaining

## ACTIVITIES

## NOTES

## MATERIALS

Student handbook

- students:
  - 1) Graph vision Male vs. Female - Use a Line-graph.
  - 2) Determine the average left eye vision for boys.
  - 3) Average the left-eye vision for girls.
  - 4) Question - according to the data collected, who has better vision in the class, girls or boys?

### D. Why is Precision So Important in Health Care Diagnosis and Treatment?

Student handbook

This area of the unit is designed to make students aware that when dealing with human lives in health care, precision is a vital factor. If a diagnosis is not based on precise and accurate data, the patient's life may be put in jeopardy.

Now that students have already recorded vision with standard eye charts they can try to hypothesize how different the results might be using a homemade chart.

Have students make their own charts. Then ask them to test the accuracy of their work by re-testing their partner's vision with this new homemade chart. Are the results the same? Why or why not?

Experiment Record

Analyze

Hypothesize

Oak tag  
Pencils  
Pens  
Rulers

Student handbook

Student handbook

## LEARNING PROCESS

### ACTIVITIES

### MATERIALS

### NOTES

#### Communication

Explaining  
Recording  
Analyzing

- 1) Could you rely on the results gotten from your "homemade" chart? Why or why not?
- 2) Were any results different from those acquired using the "standard" chart? If so, explain why.
- 3) Why is it important to be precise in health care diagnosis and treatment?

#### OPTIONAL ASSIGNMENT

Predict and  
Explain  
Hypothesize

133 Compare/Contrast  
Record  
Interview  
Observe

Now that the students have experienced vision testing, it may be interesting to record their generalized interpretations of the results. They have already compared the vision of their peers. In this assignment, refer them to other age groups.

Question: Do you think a person's vision gets better or worse with age? Ask students to support their answers by interviewing and describing the vision of at least 6 different adults. Then compare and contrast these results to the class results acquired earlier.

Interview forms  
Previous class eye test results in handbook.

It is suggested that the teacher help the student draw up a few simple interview questions that would help direct the student's inquiry in the right direction.

#### Review - Summary

#### UNDERSTANDING WHAT YOU HAVE LEARNED

This mastery review concerns the

## LEARNING PROCESS

### ACTIVITIES

major areas discussed in the first part of the unit -

- 1) Why is it important to diagnose or identify health problems?
- 2) What are three (3) important steps health workers use to diagnose a problem?

- 3) Explain briefly why a health worker's diagnosis must be precise or exact.

- 4) Do you think you could get accurate and reliable results from an eye chart you made yourself? Why or why not?

Hypothesize  
Predict

### II. GATHERING, RECORDING AND ANALYZING DATA IN EXPERIMENTAL SITUATIONS

In this section students will begin to practice using the data collection and analysis technique. There are 10 simple experiments most of which can be performed in the classroom. Many require a science background, others require no more preparation than a simple review of the materials listed in this guide.

Students are to select 3 out of the 10 exercises. For each, they are to record all necessary data. Whenever possible, explanations and results should be drawn and labeled. Once data has been gathered and recorded in the proper experimental format, students are to analyze all data and formulate logical conclusions.

## MATERIALS

## NOTES

## LEARNING PROCESS

### ACTIVITIES

By conducting these experiments properly, students not only acquire mastery of simple health related tasks but also learn a valuable problem-solving technique.

### MATERIALS

### NOTES

By conducting these experiments properly, students not only acquire mastery of simple health related tasks but also learn a valuable problem-solving technique.

#### 1. Blood Typing: A. Background

Small amounts of blood mixed with serum will indicate blood type. Use 2 serums, one with Anti A agglutinin, the other with Anti B.  
Type AB - no agglutinins in plasma  
AB - red cells have both A and B agglutinogens  
Type A - plasma - Anti B agglutinins  
red cells - type A agglutinogens

Type A - Anti A agglutinins  
red cells - type B agglutinogens

Type O - Anti A and Anti B agglutinins in the plasma  
red cells - weak agglutinogens.

#### B. Experiment:

##### Experimenting

1. Sample # - Ask students to prick their fingers to obtain a small blood sample or give them a small amount of blood to test.

If blood is already obtained, be sure to number each sample for ease in laboratory results.

- a. blood samples

Blood Typing Kit  
(coagulants and color charts).

#### Reference Text:

King and Showers.  
Human Anatomy and Physiology; W.B. Saunders, Co.; Philadelphia, Penn.; 1969

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

2. Materials:  
blood sample  
2 serums - Anti A and Anti B  
agglutinins.  
slides  
microscopes (eye dropper)  
small toothpicks (to mix blood  
and serum)  
chart of clumping as reference
- b. Anti A and  
Anti B serums  
c. slides  
d. microscope  
e. eye droppers  
f. charts as  
references  
g. toothpicks  
h. drawing paper  
i. student handbook
3. Procedure:  
  
Obtain blood sample  
Make wet mount of sample  
Mix with Anti A  
Make second wet mount of sample  
Mix with Anti B
4. Results:  
  
As determined by blood type  
Should include drawings of  
reactions taking place.
5. Conclusions:  
  
Should state blood type tested
2. Testing for Body Sugar: A Back-ground  
  
Besides testing urine and  
saliva, students may want to  
test different foods for the  
precipitate, the color of which varies from

### Hypothesizing

### Recording

- a. Benedict's solution
- b. Urine samples
- c. Saliva samples

11-III

LEARNING PROCESSACTIVITIES

green to orange to red to brown depending on the amount of reducing sugar present.

B. Experiment:

Materials: at least 5 ml of Benedict's solution for each test; test tubes; Heat source; samples to be tested

Procedure: Add about 10 drops of the sample to 5 ml of Benedict's solution; boil carefully for 2 minutes; allow to cool; record observations.

Conclusions: presence of sugar will be indicated by precipitate color. Brown shows the presence of a great deal of sugar.

3. Testing for Color Blindness -

Using the charts, the subject must try to see if he can read numbers on them.

4. Body Temperature - Reading a Thermometer

Here in the interest of precision, it is suggested that additional simple experiments be used.

MATERIALS

- d. test tubes
- e. heat source
- f. Student handbook

NOTES

presence of glucose

This test works only for a reducing sugar (sucrose). A non-reducing sugar must first be treated with hydrochloric acid.

- a. Color Blindness Test Charts
- b. Student handbook

To give the students additional practice in thermometer reading, it is suggested that additional simple experiments be used.

## LEARNING PROCESS

### ACTIVITIES

derstand that he must shake down the thermometer before each use.

For example, put thermometer in hot water and on ice.

### 5. Measuring Height and Weight see Unit I - Introduction to Allied Health

These exercises, because of their importance, have been reincluded in this unit. Many students may want to review the procedures involved.

### 6. Growing Germ Cultures -

Experiment  
Observe  
Record  
Hypothesize  
Analyze

An integral part of health care is the knowledge and understanding of germs and germ growth. In this experiment, students culture germs.

Materials: Petri dishes with agar and lids. (at least 6) (sterilized)

Procedure: 1) In dish A1 - leave it closed, put it in dark place (warm).  
A2 - leave it closed and sterile - put in refrigerator.

Dish B1 - open lid for 5 minutes and then reclose. Put it in a warm place (dark).  
B2 - open lid for 5 minutes then reclose. Label and put in refrigerator.

Reference:

Oxenhorn, Joseph N. Pathways in Science - Biology  
Book 2.  
New York: Globe Publishing  
Co.; 1969

Unit I - Introduction to Allied Health

Petri dishes  
agar  
covers  
milk  
dark area  
light area  
milk  
saliva  
microscope  
slides  
eye dropper  
Student handbook

### MATERIALS

### NOTES

For example, put thermometer in hot water and on ice.

### Unit I - Introduction to Allied Health

## LEARNING PROCESS

### ACTIVITIES

- C1 - Put a drop of milk into each.
- C2 - Place one in a warm dark closet, the other in the refrigerator.

#### OPTIONAL -

D1 --- Saliva put on each  
D2

- 2) Leave dishes undisturbed for one week.
- 3) Ask students to check jars - note the conditions under which germ colonies have grown.

- 4) Record all results. Draw and label each petri dish and its contents:

Conclusions: (to be discerned by the students)

- a) Some dishes have developed colonies, others have not.
- b) A sterile, unopened dish has no colonies.
- c) There are more colonies when the temperature is warm.

Also Optional - Make slides of some germ smears grown during the week.

Observe them under the microscope and redraw the specimen as they appear magnified.

## MATERIALS

### NOTES

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

#### Student handbook

#### If the instructor

desires, this exercise could also include a lesson on the fahrenheit vs. the centigrade thermometer. Students could measure and compute with both.

#### 7) Measuring Calories

Procedure for measuring the number of calories needed to raise water one degree centigrade is outlined in the student handbook.

Procedure: a) Provide students with several sets of figures to compute calories required.

b) Provide students with thermometers and water samples.

Ask them to take temperature readings before heating and then to take temperature readings after a designated period of time. How many calories are required to make this temperature change?

Record all answers.

#### 8) Measuring Breathing - How Much Air Can You Take In?

Experiment  
Record  
Observe  
Measure  
Analyze

#### How Much Air

Materials: See Materials at right  
Procedure: a) Mark the jar at the quarter, half, eighth, three-quarter points.  
b) Fill the jar with water  
c) Put the glass plate over the mouth.  
d) Put the jar upside down in the pan filled with water.  
e) Remove the glass or metal plate from the mouth of the jar carefully and put the hose in.

f) Take a normal breath and then

Large Pan  
1/2 gallon jar  
rubber hose  
flat metal or  
glass plate  
student handbook

## LEARNING PROCESS

### ACTIVITIES

exhale into the tube.

g) Mark the spot that shows how much water is left in the jar.

h) Refill the jar and repeat taking a very deep breath. Compare the two results.

#### Results: (to be discerned by students)

- a) As you exhale into the tube, the water will move out of the jar and into the pan.
- b) More water moves out of the jar (is displaced) when you breathe deeply than when you breathe normally.

Conclusion: You can measure how much your lungs can hold by measuring how much water is displaced.

#### Hypothesize Explain

Question: Why is it important to take deep breaths?

This question has been included to make the students consider the importance of the assignment and the direct connection to health and physical well-being.

## NOTES

### MATERIALS

Student handbook

**LEARNING PROCESS****ACTIVITIES****NOTES****MATERIALS****9) Planning a Well-Balanced Meal**

The reading selection in the student handbook briefly outlines the six basic nutrients; their importance and nutritional value.

Other data necessary for completion of student activities can be found below:

**A. IMPORTANT VITAMINS**

VITAMIN	FOODS CONTAINING	WHY IMPORTANT
VITAMIN A	green & yellow vegetables, milk, butter, cheese, liver, eggs, tomatoes.	helps avoid colds, helps avoid night blindness, keeps nasal tissue healthy.
B <sub>1</sub> (thiamine)	milk, meat, liver, green vegetables, whole grain cereals, eggs, white bread.	helps digestion, prevents beri-beri, helps appetite, needed for growth.
B <sub>2</sub> (riboflavin)	milk, eggs, cheese, meats, poultry, liver, peas, green beans.	helps respiration, keeps skin healthy, helps vitality.
C (ascorbic acid)	citrus fruits, tomatoes, fresh fruit and vegetables.	prevents scurvy, keeps gums and teeth healthy.
D	milk, fish, liver oil, oysters, sunshine	strong bones and teeth prevent rickets
Niacin	whole grain, liver, meats, fish, eggs, beans, peas, nuts	prevents pellagra, helps muscle cells use foods.

## LEARNING PROCESS

### MATERIALS

### NOTES

### ACTIVITIES

#### B. NUTRIENTS AND WHERE THEY CAN BE FOUND

Carbohydrate	candy, granulated sugar, syrup, fruits, cookies, sweets.
Sugar	bread, cereals, potatoes, macaroni, rice, cakes.
Starch	butter, margarine, nuts, egg yolk, salad dressing, cream
Fats Oils	
Proteins	milk, fish, cheese, peas, beans, nuts
Vitamins	See Chart A
Water	Drinking water, most foods, milk, vegetables

Calorie charts may also be obtained as supplementary material.

#### C. BASIC FOOD GROUPS (for a balanced diet)

- I. HEAT - 2 servings or more of chicken, fish, meat or eggs. Also dried beans, dried peas, nuts, peanut butter.
- II. VEGETABLES and FRUIT - 4 or more servings. At least 1 fruit and 1 dark green or yellow vegetable.

## LEARNING PROCESS

### ACTIVITIES

- III. BREAD/CEREAL - 4 or more servings.
- IV. MILK - At least 3-4 glasses.  
Also cheese and ice cream.

### MATERIALS

### NOTES

It is not expected that students be able to plan proper nutritional meals with 100% accuracy. It is hoped that they will begin to become aware of all of the factors necessary in proper diet planning.

**OPTIONAL ACTIVITIES** - These activities have been included as supplemental reinforcement exercises.

Communicate  
Hypothesize  
Analyze  
Record

Student handbook

Purpose of questions is to again make students aware of the direct connection between proper eating habits and physical well-being.

#### 10) Recording Heart Beat

Experiment  
Measure  
Observe  
Record  
Analyze

It is requested that teachers have available, as supplemental material, diagrams of the heart and the origin and mechanics of a heart beat.

Student handbook  
Stethoscopes  
Stop Watches

## LEARNING PROCESS

### ACTIVITIES

stethoscopes and stop watches, students measure and record each other's heart beat.

### III. MAKING OBSERVATIONS AND INFERENCES

An inference may be defined as an explanation for something observed. In this section of the unit, students will practice making logical observations and justifiable inferences about them.

- 1) In order to introduce the idea and concept of making inferences, the teacher can show the students several pictures that have multiple interpretations.  
e.g., - A girl blinking - or is she winking?
  - a) What can you observe about the photograph?
  - b) What can you infer from your observations?
  - c) Are your inferences logical? How can you justify the inferences you have made?
  - d) What is the difference between an observation and an inference?

OPTIONAL - Ask the students to think of and write out several observations and possible resulting inferences.

### NOTES

### MATERIALS

Student handbook  
picture series

Suggested photos:

- a) girl blinking
- b) crowd of people (what are they doing)
- c) different hands (infer type of work)
- d) street scene

Student handbook

Throughout all discussions it must be emphasized not all inferences can be proven. An inference can only be supported by other evidence. There are no absolute answers.

## LEARNING PROCESS

## ACTIVITIES

e.g. - If you wake up and see wet streets, you can infer that it had been raining. Wet streets are observable; the fact that it had been raining is an inference (very logical one).

- 2) Given a list of symptoms or photos of "unhealthy" persons, students will be able to observe problems and make justifiable inferences about the reasons or origins of the situations depicted.

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3) Concept Attainment Games -  
Attribute Game

Games by William Clement  
and available through  
TACT staff.

In this set of attribute games students observe and record the symptoms of several diseases. Through a process of elimination they try to establish a positive diagnosis of the disease or abnormality. Among the illnesses used are the common cold and sickle cell anemia. Based on their observations and background information, students try to infer a justifiable diagnosis.

## NOTES

## MATERIALS

Observe  
Record  
Analyze  
Infer  
Generalize

UNIT IV  
POLLUTION IN OUR ENVIRONMENT

1-IV

ALLIED HEALTH FIELD

UNIT FOUR - SEVENTH GRADE

POLLUTION IN OUR ENVIRONMENT

GENERALIZATION - Pollution in our  
environment can be injurious to  
a person's health and well-being.

2-IV

LEARNING PROCESSACTIVITIESNOTESMATERIALSI. Types of PollutionObservational Skills

- A. Introduction to the Unit - Teacher shows class a group of ten (10) photos each depicting a different type of pollution or pollution-related problem.

Question - What are the types of pollution?

Students brainstorm possible pollution sources and types while observing pictures carefully.

Taba Concept Formation Strategy

List - Sources and types of pollution noted.

Group - Probe for relationships between items.

Label - The groups to arrive at major types of pollution in our environment.  
Give titles or names to each group.

Then ask students to match each type of pollution to one of its main sources - e.g., air pollution to factory fumes, automobile exhausts, etc.

One sub-objective of this activity is to make students aware that man's rapid strides in technology have created serious pollution problems.

B. Learning Activities - Types of PollutionObserving Forming Concepts

1. Ask students to create a collage showing the causes and effects of pollution in our society.

- These activities are designed to make students aware of the increasing threat of environmental pollution in our society.
- a) Magazines, photographs, pictures of pollution.
- b) One week's newspaper. 3-IV

1. Photographs of environmental pollution sources.
2. Student Handbook, Pages 1 and 2

The Taba strategy has been used to introduce several units in this series. For more detailed background information, see Unit I - Introduction to Allied Health Care.

MATERIALSNOTESACTIVITIES

2. For one week read a local news-paper and cut out articles relating to pollution. Notice the air pollution index reading each day. Is the reading above or below normal? How injurious is the pollution level to our health? Compare each day's reading to the previous day. Do pollution levels seem to go up or down with any regularity?

LEARNING PROCESS

Interpreting data  
Comparing/Contrasting

Applying Generalization

Divergent Thinking  
Strategy

3. Ask students to write an essay based on the open-ended question detailed on page 3 of the Student Handbook.
- This assignment is included to force students to begin to think about possible long-range effects of serious and prolonged pollution.

II. Air Pollution

Observing  
Recording  
Analyzing data

- A. Film - Air Pollution (JF-F-18)  
11 minutes

- Ask students to watch film for
- Definition of pollution stated.
  - Cause of pollution described.
  - Damage air pollution causes.
  - Remedies suggested in the film.

Discuss the film using the questions on page 4 of the handbook as a basis for the discussion.

Student Handbook  
Page 3.

Film

Page 4 Student  
Handbook

It is suggested that students take notes, regarding the pertinent information included in this film.

## LEARNING PROCESS

Communicating  
Explaining

## ACTIVITIES

Then show the film a second time without sound and ask the students to fill in the information or main points orally.

Observing  
Alternatives

Optional Homework Assignment - Ask students to evaluate each remedy suggested in the air pollution film and to suggest possible alternative remedies.

## B. Unit Project

1 Observing  
Recording  
Explaining  
Interpreting data  
Measuring  
Comparing/Contrasting  
Predicting

Ask students to begin a notebook into which they should put pertinent newspaper and magazine articles or pollution, as well as records of their own observations of pollution in their community.

Students may use a variety of sources, including observations, television programs, advertisements, newspaper articles, and other written sources, creative writing, artwork, cartoons, etc.

After a reasonable period of time has elapsed, teacher can lead a discussion concerning how the items included in these unit scrapbooks relate to the health and well-being of the human body.

## NOTES

Students should be able to give a working definition of pollution, list some causes and effects, as well as possible remedies.

## HANDBOOK PAGE 5

Handbook Pages 6 - 11

LEARNING PROCESS

ACTIVITIES

NOTES

MATERIALS

Observing  
Recording  
Experimenting  
Measuring

Measuring  
Predicting  
Analyzing

Comparing/  
Contrasting  
Experimenting

15  
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	C. <u>Experiments</u>	Kleenex tissues Car exhaust Rubber band Balance scale
Observing Recording Experimenting Measuring	A. <u>Particles in Air Pollution</u>	On these experiments, please see student Handbook for specifics.
Measuring Predicting Analyzing	1. Weigh a Kleenex or other absorbent tissue; then place it over the exhaust pipe of a running car. Remove the tissue and inspect the particles on it. Weigh the tissue again.	
Comparing/ Contrasting Experimenting	2. "Think About What You Have Learned"  This activity will help the students realize the massive amounts of automobile residue placed in the air daily and, hopefully, will lead them to think about the harmful effects of such large doses of particular residue.	
Comparing/ Contrasting Experimenting	B. <u>Cigarette Smoke</u> (and its possible effects)	Tissue/Handkerchief Cigarette smoke
Comparing/ Contrasting Experimenting	C. <u>Ringerman's Smoke Chart</u>	This chart may be obtained through the <u>Connecticut Air Conservation Committee,</u> 45 Ash St., East Hartford. It is also depicted and explained in most elemen- tary science textbooks. Any one of several smoke charts may be used for these activities.
Comparing/ Contrasting Experimenting		a) Smoke Chart b) Handbook Page 8 c) Outside trips to observe air pollution smoke.

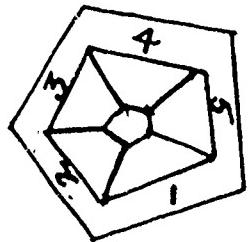
In most charts any degree of shading  
beyond block #1 is at a dangerous level.

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS



#1 - lightest and least dangerous.

#5 - darkest gray - high levels of pollution.

Experimenting  
Observing  
Measuring  
Comparing/  
Contrasting  
Predicting  
Recording Data

Introduce the smoke chart, explain its organization and use, and ask student teams to make observations in their neighborhood and other areas. Ask student teams to record location, day and time for each reading, and have them graph their results. Then collate information for each area and compare frequency and degree of pollution in different areas of Hartford and its suburbs.

Observing  
Experimenting  
Recording  
Concluding  
Generalizing

D. Effects of Chemicals Contained in Air Pollution

Demonstrate the effect of sulphur dioxide on limestone or clam shell placed in acid solution. Student should be able to name some pollutants not recorded by the smoke test.

OPTIONAL - Social studies teacher can discuss the destruction and weakening of Venetian monuments (Italy) and other old buildings and relics by chemicals contained in air pollution.

- a) Page 9 Student Handbook
- b) HCl Acid
- c) Clam shells

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

Experimenting  
Observing  
Recording

#### E. Dirt Particles in the Air

Have students smear Vaseline on a small piece of cardboard and place it outside. Observe the cardboard daily for three days. Ask students to record the appearance of the cardboard each day (drawing) and to list the different kind of particles found on the Vaseline.

Analyzing

Where do you think each kind of dirt came from?  
List possible places or things that can cause air pollution in your city.

OPTIONAL - Allow students to inspect the cardboard using either a magnifying glass or microscope.

#### F. Particles that Pollute our Water

Observation  
Recording

See student handbook.

OPTIONAL - Ask students to draw the water daily and to note the increasing amounts of residue and also to note the nature of the residue.

Forming  
Concepts

Page 10 Handbook  
Vaseline  
Cardboard

Page 10 Handbook  
Pan of water

Page 11 - Handbook  
Paper bag

G. Experiment G tries to use the previous six experiments as a conceptual basis. Students perform a relatively simple experiment and, after noting some very obvious body effects of poor, stale air, try to relate this experience to pollution.

LEARNING PROCESSACTIVITIESNOTESMATERIALSOPTIONAL GROUP ACTIVITIESQuestioning  
Technique  
Recording  
Comparing/  
Contrasting

1. Interview - Auto Mechanic or  
Pollution Control Board Member

This activity will give students practice in questioning and using the interview technique. Class can decide on a list of pertinent questions prior to the arrival of the visitor - questions emphasizing the effectiveness of new devices to curb automobile pollution.

Follow-up Activity for a selected group of students might be to draw sketches and have written plans for other pollution control devices. Also, written critique of the value of their interview and the knowledge gained from it.

Writing Skill  
Communication

2. Letter to the Head of the Hartford Water Department.  
See Handbook Page 12

English class - business  
letter writing skills

A trip to a reservoir water treatment plant can be set up here, if desired by the teacher. West Hartford and Barkhamstead are excellent sites to visit. Students would be able to observe the complete process of preparing water for consumption.

LEARNING PROCESS

ACTIVITIES

NOTES

MATERIALS

3. RANGER RICK'S AIR POLLUTION

Ranger Rick's Nature Magazine is published by The National Wildlife Federation, Dept. #280  
1412 16th St. N.W.  
Washington, D.C. 20036

Reading  
Explaining  
Interpreting Data  
Observing

Editions about air pollution, water pollution and litter (terrain pollution) are available. The magazine is written at a relatively low reading level and has high interest content. Pictures, drawings and suggestive projects make this publication very worthwhile.

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Student Handbook Page 13  
Ranger Rick's Air Pollution

If the questions are too difficult, the magazine could be read as a group activity, possibly with some areas tape recorded. Questions could then be discussed as a group assignment.

## LEARNING PROCESS

### ACTIVITIES

### NOTES

### MATERIALS

#### BUILDING AN INVERSION BOX

Experimenting  
Explaining  
Predicting  
Comparing/  
Contrasting

Building this Inversion Box will help students understand how pollutants become trapped in our atmosphere. Once the students understand the meaning of "Inversion" (through class discussion and use of the dictionary and short readings to be designed by the teacher) the box can be constructed and the activities suggested in the Conservation Manual completed.

The questions included in the Student Manual aim at stressing the most pertinent but elementary facets of this activity.

The follow-up letter to the Connecticut Air Conservation Committee can be used as an English (letter-writing practice) lesson.

FILM: TAKE A DEEP BREATH  
16 mm sound film - 25 minutes  
This film shows the problem of air pollution in a large city and the effects of pollution on Health Emphasis should be placed on health care personnel in the film.

The teacher should provide the fundamentals of the respiratory system through diagrams of the system and its parts.

Milliken diagrams would be a very good source here.

See: A Teacher's Guide to Air Conservation, sponsored by the Talcott Mountain Science Center and The Hartford Area Tuberculosis Respiratory Disease Association. Pages 12 - 20

Listed in Student Handbook Page 15

LEARNING PROCESS

ACTIVITIES

NOTES

MATERIALS

It is suggested that students take notes during the film to be used as resource material during the rest of the unit.

OPTIONAL ACTIVITY

Ask an Inhalation Therapist to visit the class. Prior to his/her visit, ask students to prepare an interview form. The therapist can discuss the effects of smoking on health, and can show the students various instruments used by an inhalation therapist and other respiratory hospital people.

Inhalation Therapist  
Contact TACT personnel for a list of prospective speakers.

Interviewing